

BOR engineers selected a damsite that looked favorable decades ago

28 Dec 1986

Bureau of Reclamation field engineers working on the Central Utah project examined a narrow spot in a valley along the Provo River decades ago that, on the surface, looked like a good spot to build a dam.

located six miles north of Heber, the dams site is very near a small settlement called Jordanelle. The name of Jordanelle Dam is now the proposed feature of the CUP's first element — the Bonneville

The exact location for the dam, the material that would be used to build it remain an uncertainty by 25 years later even though excavation is scheduled to begin next week.

During the past year, the bureau moved the center line of the dam 200 feet upstream. The change means the rest of the dam will be 3,100 feet 300 feet longer than the original plan, and the outlet works are shifted from the west to the abutment to avoid a potential area.

The west end of the dam, according to the current plan, will meet the base of the canyon just north of a rock formation bearing a painted American flag, a familiar landmark. The dam will extend northeast across the highway and valley floor before reaching the east abutment.

A change in the outlet works is the spillway and outlet tunnel will be about 1,000 to 1,200 feet rather than the 2,400 to 2,500-foot tunnels previously planned. Before that, a man-made channel will be added to carry water through the dam back to the river.

Money has been involved from the beginning, but a total price for the project is hard to calculate. Years of preliminary drafting, and decision-making have led to the awarding of a single auction contract.

Contract costs are estimated at \$69 million to relocate U.S. 40, \$23 million to relocate U.S. 189, \$7 million to build a new Wasatch County road, \$38 million for land acquisitions, and \$173 million for the dam structure.

Moving utility lines and an electrical substation, administrative overhead and other non-contract costs bring the total price tag to \$402 million.

Two dam construction options seem the most likely, said Mike Thomas, BOR's regional engineer. Thomas' preference is a standard embankment dam made mostly of materials that can be scooped out of the reservoir basin.

The best alternative would also be an embankment dam that has a section made of high-tech roller compacted concrete. The concrete section would eliminate the need for an outlet tunnel cut through the mountain side.

A panel of four consulting engineers hired by the bureau recommended using the roller compacted concrete design because it eliminated the need for a tunnel. The final selection will be made by the BOR's dam designers in Denver.

Critics of the Jordanelle project cite the recent dam alignment change as evidence that the bureau does not know the depth of the bedrock below the valley floor.

The BOR acknowledges the geology at Jordanelle is unusually complex, and for this reason has drilled more than 140 test holes — many more than usual.

Leon Hansen, a consulting geologist who has spent the better part of his career working with Park City mining interests, scoffs when the BOR claims safe embankments have been constructed upon foundations where the depth of the bedrock was unknown. "I do begin to wonder. Why then have we been drilling at Jordanelle for 24 years?" he said.

FUTURE

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But surpluses may not exist during drier years. In addition, most of the water considered surplus on the river does have claims on it at Utah Lake, so the BOR plans to send Strawberry Reservoir water to Utah Lake to make up for withheld Provo River water.

Jordanelle would have an impact on many other lakes in the region once construction is under way. The bureau plans to stabilize 15 upper-mountain reservoirs in the Uinta Mountains near the headwaters to the Provo River. The largest are Trial, Wall and Washington lakes.

The stabilization would reduce the overall water level in the Provo River between the headwaters at Trial Lake and Jordanelle Reservoir and could impact 38 miles of stream fishery. The increased access to fishing at the reservoir is meant to compensate for the stream fishery losses, which is of little consolation to the members of fly fishing organizations or the Environmental Protection Agency.

The EPA does not agree the bureau can adequately replace 135 acres of existing wetlands with Jordanelle shoreline.

State officials estimate the reservoir would receive 90,700 man-days of fishing annually compared with about 1,321 man-days of fishing under current stream conditions.

Almost all of the water in the reservoir would be active storage, meaning the lake could be almost completely emptied during an extended drought. During an average year, the water level would drop 31 feet.

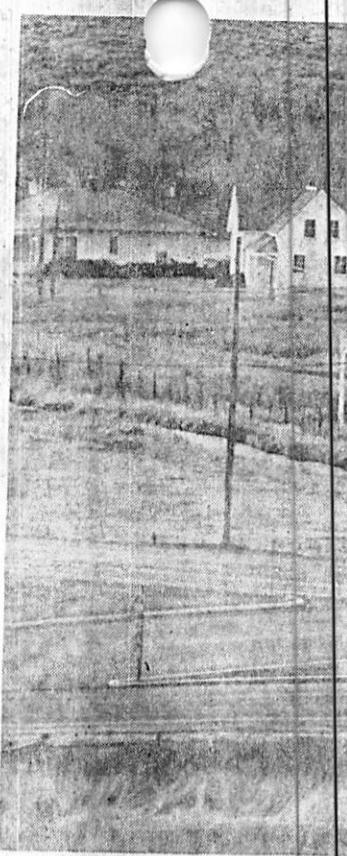
BOR planners charted weather conditions between 1930 and 1974 and have simulated what the current demand on the reservoir would be, assuming Utah sees similar weather cycles. The reservoir would have been drawn down to an elevation of 6,120 feet above sea level — 44 feet below the full level — during one five-year period. The severe drought in the late 1930s and early 1940s would have required the lake to be completely drained in 1942.

Because of the gradual slope in the reservoir basin at the extremities of both the northern and eastern arms, the shoreline would move significantly depending on weather conditions. During wet years, 228 acres would be exposed during the late summer when water is released through the dam. During an average year, that amount would almost double with 439 acres exposed; and 739 acres would be exposed in a single season during drought conditions.

If the reservoir is full at the beginning of the summer, the shoreline at the ends of the northern and eastern arms could move a half-mile during the drawdown period in an average year.

Because of that fluctuation, the plans for a recreation facility planned at the end of the eastern arm do not include a boat ramp, which could be 2,600 feet from the water during summer boating months. The campground would be oriented more around traditional camping, with camp sites scattered among the trees, said Fred Liljegren, BOR landscape architect.

"This will be more of your quiet get-away-from-everybody type camping." A mile-long segment of the Provo River upstream from the high-water line on the reservoir would be available for fishing, canoeing and kayaking.



Farm homes and outbuildings

Higher density camping facilities a 10-lane boat ramp, parking to accommodate 300 vehicles and day-use beaches and group recreation areas are planned for construction at what has been dubbed the Hailstone Recreation Area on the west side of the reservoir about one mile north of the dam. Hailstone would be the main recreation development and is being designed to conform with Utah State Parks and Recreation standards.

The state has not committed to assume responsibility for the recreation area, and construction of it won't begin until that commitment is made.

An area for a marina and boat slips has been designated near the main recreation development, but it would have to be built by a concessionaire, not the bureau. Several areas on the east side of the northern arm may prove to be good windsurfing spots, but they will be evaluated after the reservoir fills, Liljegren said.

Another state agency, the Utah Division of Wildlife Resources, is making plans now to stock the reservoir for fishing. "We do have Jordanelle on our projected fish needs," said fisheries manager Glenn Davis. "That will be one of the priorities in the state because of its location."

Stocking Jordanelle would put a considerable strain on the state's aging hatchery system, he said. "The system we've got is deteriorated badly. Our hatcheries are in pretty poor condition, the majority of them."

Davis said Jordanelle is expected to have good fishing, at least initially. "New waters provide the best fishing."

That condition could change, though, unless the bureau can overcome a heavy metals and oxygen problem described in its 1979 Final Environmental Statement.

Most of Jordanelle's water would enter through the eastern arm. Only 5 percent would enter through the northern arm, which means the water in the northern part of the reservoir would have less turnover and could become stagnant. The northern arm also has heavy metals contamination potential because of mine drain inflows, the presence of mine waste piles in the basin and natural soil mineralization.

he said.

He told the Bureau, "I think it's obscene that some man, appointed from who-knows-where, and who knows nothing about our state, comes in and tells me, who's living right here, that I have no business telling people how to manage that reservoir area."

Bingham Engineering, which developed the recreational development plan for the State Park board, estimated the cost for developing the park, within the reservoir take-line, at \$20 million, while only \$12 million is budgeted. But Fred Lilligren, recreation specialist for the Bureau, said some items included in the estimate don't have to come out of the \$12 million, like planning, designing, sewer lines, and overhead.

"When we talked about a \$12 million cost, we included 'on ground' costs--what we call 'field costs,'" he said. "We are within a few hundred thousand dollars of what their estimates were...The funding issue is not as big a concern to me now that I've had a chance to review it".

The estimate included \$5 million to install a complete sewer system and trunk line to Heber City. But now that the proposed Mayflower Resort, west of the reservoir, has signed a contract for sewage treatment at the Heber Valley plant, the park can save money by hooking onto Mayflower's trunk line and sharing expenses.

Steve Noyes, water quality specialist for the Bureau, suggested that the County immediately form a valleywide sewer system for the entire Jordanelle area, rather than allow any septic tanks, which could threaten water quality. The County already has made it clear that septic tanks are not acceptable around Jordanelle, and recommended a sewage system as part of the Park Master Plan.

Commission Chairman Moroni Besendorfer said he was concerned about water quality at the reservoir if there aren't enough facilities to take care of all the people that are expected to recreate at the reservoir, and that the responsibility for clean water could fall back on the County.

"When that project is finished, it should be adequate to take care of all of the proposals, and everything that has been suggested on the master plan," he said.

Lee McQuivey, the Bureau's assistant project manager in Provo, responded, "Our first objective is, of course, to take care of the health and safety of the people...Above that, it is to try to put in as many recreational amenities as there are needs for."

Besendorfer also told the Bureau that officials "talk out of both sides of their mouths" on the issues involved in the proposed Provo River Parkway, between Jordanelle and Deer Creek Reservoirs.

McQuivey said the Bureau has contracted the U. S. Forest Service

of there, and let the general public run through it..."

"We have some very irate property owners...because they get tromped to death down there."

He said the task force would present its proposals to the Bureau, which would represent the opinions of the property owners and "would be good for everybody."

Mathis reported that Jerry Miller, Director of the State Division of Natural Resources, which includes the Department of Parks and Recreation, told him, "His agency isn't going to pick up garbage along the river."

McQuivey explained that, according to Miller, if the river is developed into a full parkway, Parks and Recreation would manage it. But if there are only easements to provide access to fishing, it wouldn't be interested.

"I think what [Miller] means is that he's willing to have somebody there to take tickets at high-class public access points, send people on their way and answer questions about the pretty things they see, but not willing to do anything in between...If people are in there, they're going to do things. Without someone here to protect the resources and help protect the private property around it, it will be destroyed..."

"I don't see anyplace in the State Law where the Division of Natural Resources, as a division, does much more than exist. The Parks Department is the only one that can protect resources, of that whole bunch. All the others are single purpose agencies. So I don't think we've got any protecting agency over the Jordanelle...and we won't have any protecting agency over the riverway. How can that be acceptable?"

The consensus of opinion, among all agencies and task forces involved in planning Jordanelle

teachers have it "easy." My husband works nine hour days with lunch on the run. He works at school over the summer. His classes do not have many of the "niceties" because

Alice Roper
P.S. We feel the rest of your letter was just as inaccurate as Item 3 and, therefore, irresponsible and misleading to the public.

recreation, is for the Division of Natural Resources to take over management and delegate assignments to Parks and Recreation or Wildlife Management, as appropriate.

Lilligren said he agreed with Mathis's proposal that the State should make a signed, formal commitment to take responsibility

for management and said the master plan would be ready to be proposed when the Legislature meets in January.

"Your credibility with Wasatch County residents is about like Jim Bakker's with the PTL. We have been lied to. We've been given ultimatums," Commissioner Pete Coleman told the Bureau.

Hailstone
Landmark
Lee Jordanelle
Tie
Jordanelle
For Dam
For facts

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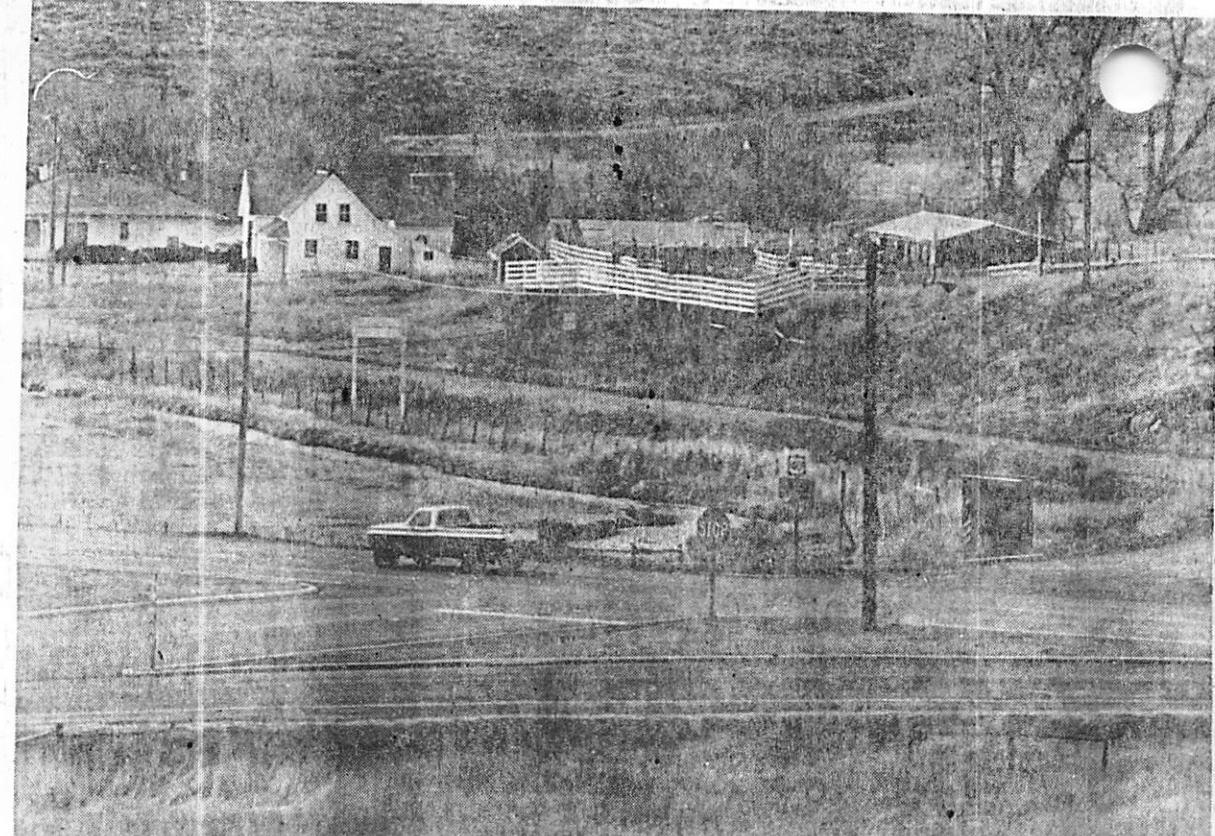
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PHOTOGRAPHY/ TOM SMART

Farm homes and outbuildings in Jordanelle at Hailstone Junction will make way for the dam.

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"If anaerobic conditions were to develop within this arm of the reservoir, the water might become acidic," the environmental statement reads. "The fall turnover would then mix these metals throughout the water column producing aesthetic problems, and possibly some toxicity."

The report also says the water could kill macroinvertebrates that fish feed on, causing the fish to leave that segment of the reservoir.

Jerry Miller, BOR water quality branch chief, said Jordanelle is considered to be a "sacrifice reservoir" because it would capture mineral contaminants that would otherwise flow directly to Deer Creek Reservoir. The bureau, which also built the dam at Deer Creek, has a plan to reduce by half the 27.6 tons of phosphorus that enters Deer Creek each year. Jordanelle plays a significant part in that phosphorus reduction plan, Miller said.

Because of likelihood of phosphorus and heavy metal contamination in Jordanelle, an artificial method for mixing the water in the north arm and maintaining adequate oxygen levels would be a perpetual lake management task.

A pumping station that would inject air at the reservoir bottom would probably be located somewhere on the northern arm, said Miller.

BOR officials are trying to get the Olson-Neihard mine tailings pond, less than a mile northwest of Hailstone Junction, included in the federal Superfund project to have the tailings moved to a higher elevation out of the reservoir basin. BOR Project Manager Kirt Carpenter said the tailings could be stabilized where they are, but the BOR can see a problem doing that if the inundated tailings later become suspect in a water quality problem.

The Mayflower Mountain tailings ponds, which would not be inundated, were within the reservoir management boundary surrounding the reservoir. That parcel of land was removed from the management area surrounding the reservoir basin recently.

The cleanup there is now the responsibility of Dutch developers who own the land and plan to build a resort community and ski area on the Wasatch slopes west of the reservoir,

with a chair lift connecting the new resort to Deer Valley.

Attorney Craig Smay said the development at the resort area was to be under construction this year on a total of 4,300 acres of land, but construction is now expected to commence next spring. Some 3,500 condominium, townhouse and hotel units are planned for construction over the next 10 to 20 years, and ski lifts could be operating several years before the reservoir begins to fill.

Ownership and operations at the Mayflower Mountain development and Deer Valley would be separate, though one or more interconnecting lifts would allow skiers to use both sides of the mountain, Smay said.

While skiers would be traversing the top of both sides of the mountain, mining interests fear water from the reservoir would be crossing under the mountain, spelling doom to future mining activity in the Park City mining district.

Just as mining residue would have an adverse impact on water entering the reservoir, hydrostatic pressure may force water out of the reservoir through underground fissures in rock formations that would substantially increase the amount of water entering mine shafts in the Park City mining district.

Most of the underground mines in the Park City area, located several miles west of the reservoir site, are 500 to 700 feet lower than the reservoir.

McKay Edwards, president of Park City Consolidated Mines Co., said water from Jordanelle would flood the Park City mines. The mining district is inactive, partly because water in the mines is already a problem. Potential investors that consider reactivating the mines lose interest when they find out about Jordanelle, he said.

BOR officials say Jordanelle would have a minimal impact on the water problem in the Park City mining district.

All of the water that leaves Jordanelle the way it is supposed to — through the outlet works at the dam — would be delivered for use through Deer Creek Reservoir. Several existing aqueducts would be used to convey the water to Salt Lake County and northern Utah County, and several other aqueducts are under construction.